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International Business Machines Corporation

1301 K Street, NW  
Washington, DC 20005-3307  
202/515-4000

November 20, 1997

Ms. Magalie Roman Salas  
Office of the Secretary  
Federal Communications Commission  
1919 M Street, N.W.  
Washington, D.C. 20554

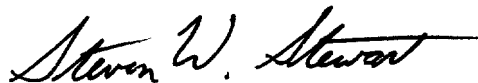
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NOV 20 1997  
FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

Re: Ex Parte contact in CC Docket No. 96-45

Dear Ms. Salas:

The attached letters from IBM Chairman and CEO Louis V. Gerstner, Jr., were sent to each of the five Commissioners. An original and one copy of this letter, along with attachments, is included.

Sincerely,

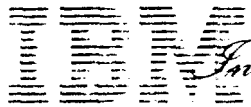


Steven W. Stewart  
Program Manager, Telecommunications Policy

Attachments

No. of Copies rec'd  
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Office of the Chairman and Chief Executive Officer

Armonk, New York 10504-1783

November 19, 1997

CC Docket 96-45

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

The Honorable Michael Powell  
Federal Communications Commission  
1919 M Street, N.W.  
Washington, D.C. 20554

Dear Commissioner Powell:

Congratulations on your new position at the Federal Communications Commission. As you begin to work with your fellow Commissioners, you will face many important issues that could have a profound impact on the development of the Internet and its ability to deliver beneficial new applications for education, health care, and electronic commerce. In the spirit of trying to be helpful on these complex issues, I would like to offer two principles that I hope will guide your decisions and urge the quick resolution of one specific issue.

As a guiding principle, the Administration and the Congress have indicated that the proper course of action is to allow electronic commerce and the Internet to develop unhindered by regulation in order to promote economic growth and innovation. We agree with this principle and urge you not to expand telecommunications regulation to the highly competitive arena of the Internet. IBM strongly supports the Commission's decisions earlier this year that it would be inappropriate to impose carrier access charges and direct universal service contributions on Internet service providers, and I urge you to continue this pro-competitive, deregulatory policy.

A second guiding principle for the Commission should be to ensure that there is intense competition in the delivery of high-speed access for both business and residential users -- competition just as intense as in the computer industry. As the Internet continues its explosive growth and as new applications are developed, there will be a growing demand for broadband network access. Although the Commission's implementation of the Telecommunications Act of 1996 is a good start, more can be done to ensure the greatest number of competitors in the provision of broadband access.

Specifically, there is one issue that I hope you can resolve soon. The Commission's universal service order has the apparently unintended effect of subjecting IBM and others in our industry to a form of regulation. The broad language of this order sweeps in IBM and other systems

The Honorable Michael Powell

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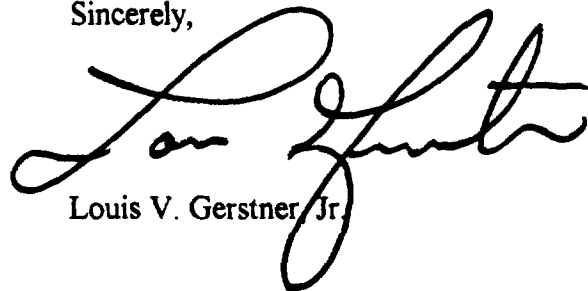
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Finally, I want to share with you something that IBM has done recently to support the Commission's efforts. Last June, former Chairman Reed Hundt asked a number of computer companies to help K-12 schools understand the opportunities of the new universal service fund. IBM responded by creating the attached brochure to describe the universal service program and to assist schools in technology planning. This brochure was mailed to each of the more than 12,000 school districts in the U.S., and we have made it available on our Web site with links to many useful resources. We hope these actions will help schools to make the most of the opportunities presented by the Commission.

I look forward to working with you on issues that will be of critical importance to the continued advancement of the Internet and electronic commerce. As time is short to resolve the universal service issue for systems integrators, I have asked Chris Caine, IBM's vice president for Governmental Programs, to follow up with you to further explain the importance of this issue to IBM.

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Louis V. Gerstner, Jr.

LVG/sf

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Armonk, New York 10504-1783

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

The Honorable Susan Ness  
Federal Communications Commission  
1919 M Street, N.W.  
Washington, D.C. 20554

Dear Commissioner Ness:

As you begin to work with the new Commissioners, you will face many important issues that could have a profound impact on the development of the Internet and its ability to deliver beneficial new applications for education, health care, and electronic commerce. In the spirit of trying to be helpful on these complex issues, I would like to offer two principles that I hope will guide your decisions and urge the quick resolution of one specific issue.

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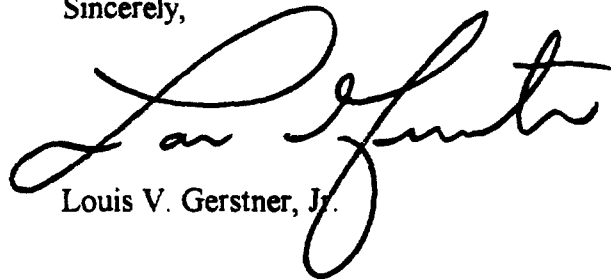
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Louis V. Gerstner, Jr.

LVG/sf

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Armonk, New York 10504-1783

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

The Honorable William E. Kennard  
Chairman  
Federal Communications Commission  
1919 M Street, N.W.  
Washington, D.C. 20554

Dear Chairman Kennard:

Congratulations on your new position as Chairman of the Federal Communications Commission. As you begin to work with your fellow Commissioners, you will face many important issues that could have a profound impact on the development of the Internet and its ability to deliver beneficial new applications for education, health care, and electronic commerce. In the spirit of trying to be helpful on these complex issues, I would like to offer two principles that I hope will guide your decisions and urge the quick resolution of one specific issue.

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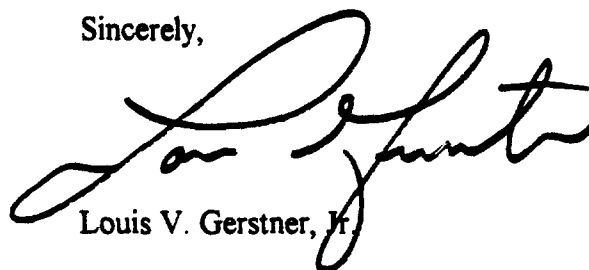
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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

The Honorable Harold Furchtgott-Roth  
Federal Communications Commission  
1919 M Street, N.W.  
Washington, D.C. 20554

Dear Commissioner Furchtgott-Roth:

Congratulations on your new position at the Federal Communications Commission. As you begin to work with your fellow Commissioners, you will face many important issues that could have a profound impact on the development of the Internet and its ability to deliver beneficial new applications for education, health care, and electronic commerce. In the spirit of trying to be helpful on these complex issues, I would like to offer two principles that I hope will guide your decisions and urge the quick resolution of one specific issue.

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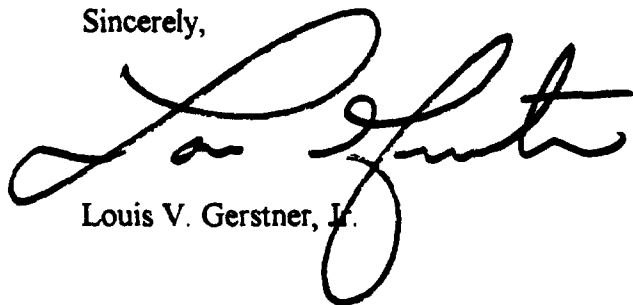
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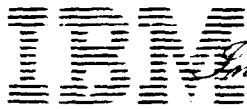
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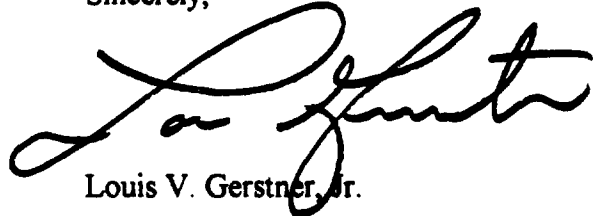
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The administrator will post applications for funding support, with the description of services to be purchased, on a Website the FCC will create. This will allow all potential providers to review and submit bids. A school must allow at least four weeks after its application has been posted before signing a contract for services.

Schools are responsible for paying the non-discount portion of their services. The fund administrator pays the discount to the provider upon proper notification from the school. Schools are also required to maintain appropriate records and to submit to random compliance audits.

Services purchased under multi-year contracts are eligible for discounts but payments will only be committed for services provided in the current funding year. The FCC may determine that contracts negotiated previously can be eligible for that portion of services delivered during the 1997-1998 school year or later.

#### **Further Information**

Updated program information will be available on the FCC's LearnNet web page at [www.fcc.gov/learnnet](http://www.fcc.gov/learnnet).

## **Schools Are Getting Started**

A number of schools – some just beginning to think about how to incorporate networking into their classrooms and others who have been implementing for some time – are getting ready for the USF rate reductions by **preparing technology plans**. A state-approved technology plan is an explicit requirement for Universal Service rates, but its importance goes beyond that.

Schools with successful technology implementations create plans that are school improvement plans leveraging technology to achieve their goals. Technology for its own sake measured by the ratio of students to computers or the number of PCs connected won't help students achieve higher performance and do not justify the expense. A plan with clear educational goals and measurements, the process to produce it and a framework for frequent updates form the foundation for implementing effective, community-supported technology.

School administrators who led effective technology planning in San Francisco, Memphis, Chicago and elsewhere have engaged a broad range of policy makers, teachers, other administrators, parents and taxpayers in discussions identifying clear results and their measurements. The community understood that the educational mission defined the use of the technical tools – and not the other way around. Uncovering areas not effectively addressed by current methods was key in these conversations.

Next, the groups **addressed their goals**, including these points:

- What learning standards will be the basis of the plan?
- How will success be measured and how often?
- How will parents and the community be involved?
- How will the plan be refreshed as learning goals change?
- What professional development ensures administrators, teachers and support staff can integrate new technologies, techniques and resources into their work?

Only after these were addressed, did planning turn to specific technical solutions, support needs, budget and implementation.

With the Universal Service Fund, schools that have been through this process get an opportunity to bring the community together to review progress, incorporate new educational goals, identify hurdles that need to be overcome and update the plan with newer technology alternatives. It may even offer a way to speed up timetables as long as there is time to prepare teaching and support staff in educational applications or technology.

In either case, the additional connectivity raises questions about **what levels of access are given to whom**. Examples include:

- How do you foster responsible utilization among students?
- How are systems to be protected from abuse (extra expense)?
- Does access for young students equal access for older ones?
- Will teachers' connect to instructional planning resources and other work from home?
- How will you support teachers' collaboration?
- Will students and parents have access to educational resources from homes and/or community centers?
- How do you prevent access to objectionable material?

For each of these questions, technical solutions are available to create an answer that makes sense for your community.

The resource listing includes Websites giving details on how to build technology plans along with many good plans to review. To expedite planning, there are experienced consultant services available to create or help create technology plans.

## Discount Levels

Discounts vary and they are based on two main factors. Rural schools will generally receive higher discounts than urban schools and economically disadvantaged schools will receive higher discounts than less needy ones. **The percentage of students eligible for the national school lunch program will be used to determine the discount level.** A school may create a consortium with other eligible schools, libraries, rural health care providers and public sector customers. This is allowed to increase buying power by achieving a lower pre-discount price.

Discount levels are summarized in the following table.

Percentage of Students Eligible for National School Lunch Program	Percentage of Schools in Category	UNIVERSAL SERVICE DISCOUNTS	
		Urban Discount	Rural Discount
<1	3	20%	25%
1-19	31	40%	50%
20 - 34	19	50%	60%
35 - 49	15	60%	70%
50 - 74	16	80%	80%
75 - 100	16	90%	90%

## Application Process

School districts and individual schools may apply to be eligible for the discounts. Applications will be accepted by the program administrator beginning on July 1 (except for 1997) for funding in the following calendar year. Applications must include:

- **Technology inventory/assessment:** List of current or budgeted computer equipment, software, and internal connections needed for communications; relevant staff training and experience; existing or budgeted computer maintenance contracts; school electrical system capacity.
- **Technology plan:** Specific plan for how these technologies will be integrated into the curriculum.
- **Description of services to be purchased:** Sufficient detail to enable potential providers to prepare bids; and percentage of students eligible for the school lunch program to determine the appropriate discount.
- **Certification under oath:** Sworn statement that the school is eligible under the rules; that services will be used only for educational purposes; that services will not be resold; that funding is available for the "non-discount" portion of the services; and includes the list of all co-purchasers.

## Universal Service Fund (USF) Program: Basic Information

In addition to the information in the program overview above, schools and communities interested in applying for Universal Service Funds will want other basic program facts.

The Federal Communications Commission (FCC) has issued rules to implement the new USF program. Program funds of up to \$2.25 billion per year **enable schools to purchase discounted telecommunications services, internal connections to classrooms and Internet access from providers**. Payments to providers giving schools discounts begin on January 1, 1998.

To receive funding, schools apply to the FCC-appointed program administrator. They must demonstrate that they have both the resources and a technology plan to make effective use of the services. Beginning January 1, 1998, schools must use a competitive bidding process to ensure they receive the lowest pre-discount price. They are required to apply each year.

### Products and Services Eligible for Support

Schools will have flexibility in purchasing communications products and services to meet their individual needs. Examples of the types of telecommunications services for which they receive discounts could include:

- telephone service to enable teachers to receive calls in the classroom;
- telephone lines for modem access to the Internet;
- integrated services digital network (ISDN) services or higher speed telephone, cable, or wireless connections to the Internet and other information services;
- and private lines for connecting schools to these services.

Schools may receive discounts on Internet access service, including e-mail service. If Internet access is bundled with content or information services, the discount applies only to that portion of the price that covers access.

Also covered is installation and maintenance of internal connections to provide telecommunications and Internet access directly to individual classrooms. Discounts are available for items such as: inside telephone wiring, wired and wireless local area networks (LANs), routers, hubs and network file servers.

Modems, fax machines and personal computers not used as file servers or routers are not eligible for support.

**Schools are free to seek the best provider to meet their needs** for Internet access and internal connections. They are not restricted to dealing with telephone carriers.

## Lessons from the Field: How Implementations Succeed

Experiences of pioneering schools over the last decade offer valuable lessons that can guide planning and implementation.

1. ***Documented, community-supported education goals.*** As noted above, effective technology planning begins with education objectives often linked to the education goals of a school, district or state. Emerging state and local academic standards offer the best framework for the educational objectives and technology plan.

Technology plans do not need to begin with all goals. Most effective technology integration started with those that are:

- (a) most important for enhancing student achievement;
- (b) most likely to benefit from the integration of technology;
- (c) well specified for implementation and accountability.

Implementation expanded as technology availability and experience grew and as educational goals evolved.

Goals which consistently had good support were specified in terms valued by teachers, parents and the community. Parents and the community want to know how technology investments benefit students. Key to communication with them is ensuring they view technology-enhanced student work, understand how technology contributes to achieving educational goals and see progress toward the goals.

Houston, emphasizing student literacy, is a good example of the use of goals. It designed its initial technology plan to support reading and writing. Technology is not used only for literacy but literacy shaped early deployment and measurement. Placement of technology readily supports extended student writing. Student work emphasizes literacy. Training focuses on improving literacy using technology, and conversations with the community center on improvements in literacy levels.

2. ***Consistent, attentive leadership.*** Successful school leaders recognize how multi-faceted the learning technology challenge is. They do not view technology deployment as merely acquisition and distribution. For them, the problem includes broad planning, integration with other valued efforts, creative technical support, ongoing comprehensive staff development and communication with the community.

Although in many districts the technology leader is the superintendent or a strong principal, in some it has not been. But, it has been a person who has the overall perspective and authority to effect change. Success has required at least one attentive and knowledgeable leader who can make system-wide decisions rapidly and effectively.

**3. Professional development.** Pioneers have found that even state-of-the-art technology in classrooms has little effect on student progress without teachers who can integrate it into instruction. The best improvements have occurred when substantial investment was shifted from technology to staff skills. Studies show that at least 15 percent (in some districts, up to 30 percent) of a district's technology budget should be allocated to staff development.

Schools with teachers skilled in education technology say professional development cannot be simply technology training. And, training must not only help teachers integrate technology into their teaching but also give them enough technical expertise to use it to learn on their own.

Many creative schools reorganized the school day to extend prep or development time for learning because training classes or summer workshops are not sufficient. Others, like those in Chicago and Philadelphia have enlisted the network itself to deliver skills. In addition to regular training, extended online communities were created. Teachers get exposure to new ideas and have ways to share innovations. Online work includes regular meetings, integration of technology ideas into staff development and creative use of Internet resources. Teachers also take virtual professional courses where they work online and are engaged with other professionals miles away.

**4. Commitment to long-range, forward-thinking planning.** Effective technology integration takes place over years, not weeks or months. Many schools report taking three years to make the large expenditures and implement the technology. They set appropriately modest benchmarks within an ambitious plan which accommodated inevitable course corrections. Their planning continually asked questions such as:

How will replacement and upgrading take place?

How will technology continue to support education goals?

How will curriculum, tools and teaching stay updated?

**5. Technical support.** Schools and businesses have learned technical support is critical and must be readily accessible to "users" in the system, in this case, teachers and students. Even modest businesses plan for personnel and services to ensure technologies function well. Problems and glitches with no available help results in technology being used ineffectively or not at all. Effective schools provide support through networks, over the telephone or with school-based personnel. Good personnel are experienced with equipment selected, can guide novices and have access to more technical help.

- How many will receive **critiques on compositions from world-renowned composers**, playwrights and artists? With the Manhattan Theatre Club's (MTC) TheatreLink project, students in New York City and in the rural areas of West Virginia and Vermont work with MTC's Teaching Artists online to create theatre together. Students in each location write scenes and then pass them on to partner schools to produce them. Producers confer with professionals and student playwrights about production issues via e-mail, electronic bulletin boards, and chat rooms.

No longer limited to published products, teachers in Chicago, San Jose, and Charleston discovered that connectivity allows them to become **more innovative and rigorous in their instruction**. Professional assistance and quality information are also available at the teachers' convenience. They are no longer tied to the infrequent training workshop.

- As a number of states and districts make their academic standards available online, teachers in North Carolina, Colorado and Wisconsin use them in searching the Internet for materials to create tailor-made lessons and to annotate evaluated student work.
- Two-way online communication gives teachers in Chicago and San Jose an easy and affordable way to share effective ideas with other teachers and receive feedback. This forever changes what has traditionally been a most isolated profession.

At the same time, networking can be used to improve the speed, quantity and quality of information available to administrators, teachers and parents.

- In many school districts, data stored on uncoordinated electronic systems remains inaccessible to teachers and administrators. Borrowing from business experience, the school district in Broward County, Florida combines disparate sources of information into a coherent central "warehouse" networked to schools. There it is used to enable teachers, principals and administrators to make more informed decisions about curriculum, staffing and budgets.
- Parents in connected communities, such as the one in Charlotte, North Carolina, directly participate in their children's education rather than being limited to a report card and a rare teacher conference. Schools know that **parent involvement in their children's education** is critical to helping students achieve higher performance. Network technology is providing an easy way to enable strong parent-school partnerships.

Virtual field trips, more information, more currency, interactions with experts, new ways of overcoming disparity of access, better teaching and better parental involvement are just some of the advantages schools have already seen. With the Universal Service Fund enabling more participation, **this is just the beginning**.

## When Communities Ask: Why Connect?

Everyday in a growing number of schools, teachers and students are proving that connecting classrooms to the rapidly expanding array of high quality online resources can result in long-lasting educational benefits. Earlier large-scale introductions of educational technology – such as radio, film, television, and microcomputers – also promised significant improvement for schools, but the reality often did not live up to expectations. **Why is connectivity different?** Put simply, connectivity can improve all aspects of the educational process.

With quality online resources growing exponentially, networked schools from West Virginia to California find that information on the Internet is **far more current and far exceeds** what even the most well-endowed school library could have. Digital resources also break down the barriers of geography and hardcopy material currency, providing classes with virtually unlimited knowledge across academic areas. For example:

- Teachers and students in connected schools in Nebraska, Texas, and Maryland work with the latest images and data from the surface of Mars through NASA's online resources.
- Students from Maine to Hawaii are citing primary source materials from the vast archives of the Library of Congress.

Especially exciting for classes is that information is no longer a one-way, inbound process. Across grade levels and curricula, teachers and students work with **“living” educational projects** available through the Internet. Students **work with scientists** to gather, interpret and report on a wide variety of data about seasonal changes, animal migrations, water quality and other research areas.

- Students across New Jersey collect information on local rivers, analyze and organize it in the classroom and compare their results online with other classes. Operating as real scientists, the students even supply data used by the scientific community at large.
- Students in California, New Mexico, Louisiana and Japan are contributing articles and local information to international newsletters.

The most profound benefits of networking come in **overcoming challenges from geographic location, economic status or physical handicap.**

Students living in rural areas or the inner city who have not traveled outside their own neighborhoods are now interacting with students in other countries, scientists in national laboratories and adults in a wide variety of jobs.

- Although **virtual field trips** may not replace actual experience, how many students will ever enter the clean room at the Jet Propulsion Lab to question technicians as they build the Mars Rover or explore the life beneath the Antarctic ice shelf?

**6. Organized experimentation.** A useful technique developed by effective systems is the ability to learn from “experiments” in a few classes or schools. This allows them to try out technologies, determine their usefulness and adjust plans before committing to the costs of full deployment. “Experiments” have led to understanding what actually happens in classrooms. Inventive teachers tried out ideas that ultimately benefited the whole system. The district gained experiences in supporting the innovation and created a systematic means of sharing them to ensure they affected large-scale plans.

**7. School/community partnerships.** Although the Universal Service Fund provides schools much financial assistance for network technology, schools will still need additional resources. Technology represents large capital investments and requires reorganization of budgets to include new and recurrent costs. Because schools have limited resources, businesses and community groups need to be encouraged to contribute their resources and skills. Enlisting business contributions, as many good systems do, is most effective with a program of regular communication centered on how technology is leading to higher student achievement. Businesses have a major stake in this goal, but it is still important to build support for education goals and provide businesses with an easy way to give advice and support.

The new Universal Service Fund is a tremendous opportunity for America's students in schools able to secure the funds and use them with as few false starts as possible. Using your own experiences and those of other successful schools should help ensure your students have what they need to succeed.



## Education/USF Resources on the Web

The following information is available on the World Wide Web at no cost. It offers a diverse range of assistance, including accounts of classroom use, professional development strategies, infrastructure primers, budget planners, technology plan frameworks and information on the Universal Service Fund. Please note Website URL addresses are subject to change. For updates to these resource addresses check our on-line version of this pamphlet on the IBM K-12 Website at <http://www.solutions.ibm.com/k12/usf/usfpamphlet.html>.

### Universal Service Program

- Funding for Technology: Telecommunications Discounts for Schools  
[www.mcREL.org/connect/tech/telecom.html](http://www.mcREL.org/connect/tech/telecom.html)  
Mid-continent Regional Education Lab (McREL)  
Links and information about the Universal Service Fund, state/local initiatives, telecommunications discounts for schools and libraries.
- FCC's LearnNet  
[www.fcc.gov/learnnet](http://www.fcc.gov/learnnet)  
Information about the Universal Service Program.

### News/Help

- AASA Front Burner Issues: Technology  
[www.aasa.org/frontburn](http://www.aasa.org/frontburn) (Technology button)  
American Association of School Administrators  
Links and summaries of key issues and news about technology in education.  
Good for keeping up-to-date. Not organized to find specific topics.
- Tech Corps  
[www.ustc.org](http://www.ustc.org)  
Volunteers from technology community. (Advice or assistance with new technologies.) Planning, technical support, staff training, mentoring and classroom aid.

### Technology Planning

- Building the Future: K-12 Network Technology Planning Guide  
[www.cde.ca.gov](http://www.cde.ca.gov) (Technology, etc. button)  
California Department of Education  
Statewide networking standards, issues in network implementation.  
Internet access for public schools.
- Computers and Classrooms: The Status of Technology in U.S. Schools  
[www.ets.org/research/index.html](http://www.ets.org/research/index.html)  
Educational Testing Service (ETS) Policy Info Ctr, Richard Coley, John Crandler, Penelope Engel Report. Technology effectiveness in US schools.

While **the program does not pay 100 percent of the cost** of eligible services and not all equipment and information services are covered, it does help to fund a significant part of the cost of bringing the vast resources of the Internet to the classroom. For many schools, this provides a tremendous incentive to take the additional steps necessary to “get connected.”

To apply for support, schools must first do **significant planning**. This can take considerable time and energy depending on where they are in network planning and implementation. The program stipulates that schools must conduct an inventory and assessment of their existing technology. They must also prepare a technology plan that describes how they will use the new technology, both in the near term and in the future. The plan must also describe how the use of the technology will be integrated into the curriculum—a critical factor in ensuring that educational goals are met.

Applications must include a sufficiently **detailed description of the services** that a school wishes to purchase so that the program administrator can post the description on its Website as a “request for proposal” facilitating the required competitive bidding process. The FCC will provide additional details on the application process soon, but schools should begin planning without delay.

## Program Overview

The Federal Communications Commission (FCC) issued schools a special invitation to take a more affordable ride on the information highway. Last year Congress created a new universal service program providing schools with discounts on Internet access and telecommunications services. The FCC is working out the details and funding will be available in the 1997-1998 school year. The program, **funded at \$2.25 billion per year**, is designed to encourage schools to be leaders in the "Information Society."

For both schools that are already linked to the Internet and those that are just thinking about getting "connected," the program is an excellent opportunity to get the maximum technology benefit out of challenging budgets. It will also help students and teachers get the latest educational tools and resources.

All nonprofit, public and private (with endowments of less than \$50 million) elementary and secondary schools are eligible to receive assistance.

**Discounts of 20 to 90 percent** on covered telecommunications products and services will be granted, with schools in economically disadvantaged areas and higher cost rural areas receiving greater discounts. Because funding will be allocated each year on a first-come-first-serve basis until the annual cap is reached, schools and school districts must begin preparing to take advantage of the program to ensure that they receive the full amount of support for which they are eligible.

The new Universal Service program is not just a one-time grant that would have limited impact on long-term educational goals. Rather, Congress recognized the importance of connecting all schools and classrooms to the Internet now and in the future, so it created a long-term source of funding for which schools will be able to apply each year.

Funds are available to support both the initial installation costs of inside wiring and communications equipment as well as ongoing subscription and usage fees for basic telephone service, Internet access and advanced telecommunications services. Schools may apply for discounts on upgrades to, or expansions of, existing connections in addition to first-time installations.

- Connecting K-12 Schools to the NII: Technology Models and Their Associated Costs  
[rpep.mit.edu/People/Rir/k12costs.html](http://rpep.mit.edu/People/Rir/k12costs.html)  
Rothstein, Russell I. August 1994 Paper.  
U.S. Dept of Ed, Office of Educational Technology.
- Getting America's Students Ready for the 21st Century: Meeting the Technology Lit. Challenge:  
[www.ed.gov/Technology/Plan/NatTechPlan/](http://www.ed.gov/Technology/Plan/NatTechPlan/)  
June 1996 Report.  
U.S. Department of Education.
- Learning Through Technology: A Planning and Implementation Guide  
[www.ncrel.org/tandl/homepg.htm](http://www.ncrel.org/tandl/homepg.htm)  
North Central Regional Education Lab (NCREL)  
For educators and community. Developing a comprehensive learning/technology plan.
- National Center for Technology Planning  
[www.nctp.com](http://www.nctp.com)  
Mississippi State University  
Details. Composing comprehensive technology plan. Large index of sample technology plans, etc.
- North Central Regional Technology in Education Consortium  
[www.ncrtec.org](http://www.ncrtec.org)  
North Central Regional Education Lab (NCREL)  
Technical assistance, professional development and tools. Integrating technology into classrooms. Technology planning. Connecting to the Internet.
- Planet Innovation  
[www.srttec.org](http://www.srttec.org) (Planet Innovation, Tech Planning)  
S. Central Reg. Tech in Ed Consortium (SCRTEC)  
Integration of meaningful technology in schools. Tools for school administrators, teachers. Plan, implement, evaluate. Staff development. Adapt to technology growth. Install/upgrade computers. Measure staff readiness.
- Reinventing Schools - The Technology is Now!  
[www.nap.edu/readingroom/books/techgap](http://www.nap.edu/readingroom/books/techgap)  
National Academy of Sciences and National Academy of Engineering  
Problems, advantages. Integrating technology in ed.
- Stages of Internet Connectivity for School Ntwkg.  
[info.ckp.edu/publications/articles/stages/stages.html](http://info.ckp.edu/publications/articles/stages/stages.html)  
Robert Carlitz, E. Hastings  
Internet access stages. Stage costs and benefits.
- Technology Plans: Resources Online  
[www.netc.org/tech\\_plans](http://www.netc.org/tech_plans)  
NorthWest Educational Technology Consortium  
Sample tech plans. Links to sites on creating plans.
- Technology: State Actions  
[www.ecs.org/ecs/235a.htm](http://www.ecs.org/ecs/235a.htm)  
Education Commission of the States (ECS) Information Clearinghouse.  
Statewide K-12 technology projects. Funding amount/source.

## Academic Standards and Education Reform

- Achieve, Inc.  
[www.achieve.org](http://www.achieve.org)  
Result of 1996 National Education Summit.  
For states, districts, business. Develop educational standards. Raise academic standards, improve assessments, increase accountability.
- Content Knowledge  
[mcrel.org/standards-benchmarks](http://mcrel.org/standards-benchmarks)  
MCREL  
Standards and Benchmarks for K-12 Education.
- Developing Educational Standards  
[putwest.boces.org/Standards.html](http://putwest.boces.org/Standards.html)  
Putnam Valley Schools, Putnam Valley, NY  
Annotated list. Internet sites. K-12 educational standards, curriculum frameworks. By content area, by state. Links to general resources.
- Learning Connection  
[www.benton.org/Library/Schools/connection.html](http://www.benton.org/Library/Schools/connection.html)  
Benton Foundation  
"Will the Information Highway transform schools and prepare students for the 21st century?" Article. Reality, issues with bridging the gap.

## Curriculum Planning

- AT&T Learning Network  
[www.att.com/worldnet/wis/explore/education](http://www.att.com/worldnet/wis/explore/education)  
AT&T  
Annotated links. Funding resources. Curriculum, professional development, planning.
- Connections+  
[mcrel.org/connect/plus/index.html](http://mcrel.org/connect/plus/index.html)  
McREL  
Internet links. Lesson plans, activities, curriculum resources. Corresponding content standards.
- Global SchoolNet Projects Registry  
[www.gsn.org/gsn/proj/index.html](http://www.gsn.org/gsn/proj/index.html)  
Global SchoolNet Foundation  
Teachers. Integrating on-line work into curriculum. Projects with Internet sessions classes can join.
- IBM Education Industry Teacher Resources  
[www.solution.ibm.com/k12](http://www.solution.ibm.com/k12)  
IBM Global Education Industry Lesson plans. Teacher resources.
- International Society for Technology in Education (ISTE)  
[www.iste.org](http://www.iste.org)  
International Society for Technology in Education Representing 40,000 educators. Technology curriculum. Technology in classroom. Research, project reports. Policy on ed tech.

Dear Educators, Parents and Community Members,

The 1996 Telecommunications Act Universal Service Fund (USF) and the potential for universal access provides a tremendous opportunity for K-12 students in this country. When technology is effectively integrated into the curriculum, it can help children succeed academically today and become contributing members of the community.

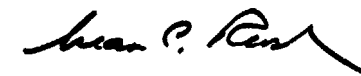
To begin supporting this effort, IBM has produced the enclosed pamphlet with an overview of the Universal Service Fund program, guidelines for preparing the required technology plan and examples from successful technology implementations in schools. These schools have increased student performance with a combination of planning, policy, technology and execution.

We hope you will find the information in this pamphlet useful whether you are just beginning to consider networking or you have a networking technology plan in place. We encourage you to visit the Websites listed in the pamphlet and continue to explore information on how the fund works, what you can do to help students meet the requirements of the world they will live in and how technology can be used to more effectively meet your schools' academic goals.

This pamphlet is just the first step in our commitment to help schools effectively implement technology. IBM has over a decade of experience networking organizations and integrating technology into the classroom. For more information on how we can help you, please call 1-800-IBM-4YOU and ask for K-12 education or explore our Website at [www.solutions.ibm.com/k12](http://www.solutions.ibm.com/k12).

The best of luck with this critical work.

Sincerely,



Sean Rush  
General Manager, IBM Global Education Industry

- Links to Curriculum Stds on the World Wide Web  
[cdp.mde.state.mi.us/info/standards.html](http://cdp.mde.state.mi.us/info/standards.html)  
Michigan Department of Education  
Links index. National, state curriculum standards.
- The Co-NECT Top 10 Educator's Guide to Internet  
[co-nect.bbn.com/Schools/TopTen](http://co-nect.bbn.com/Schools/TopTen)  
BBN  
Recommended sites. By subject area, type.
- The Virtual Schoolhouse Techie's Corner  
[sunsite.unc.edu/cisco/tech.html](http://sunsite.unc.edu/cisco/tech.html)  
Cisco Educational Archives (CEARCH)  
Web tools. Networking information. Links to educational software.  
Other useful links.
- U.S. Dept. of Education Technology Initiatives  
[www.ed.gov/Technology](http://www.ed.gov/Technology)  
U.S. Department of Education  
Links. Information on Initiatives (e.g., Technology Innovation Challenge  
Grants, Technology Literacy Challenge Fund, etc.).
- Web66: A K-12 World Wide Web Project  
[web66.coled.umn.edu](http://web66.coled.umn.edu)  
University of Minnesota  
Help set up Internet servers. Link educators, students to others.  
Help find, use web resources.

### **Success Stories**

- For Teachers Powering Learning with Technology  
[www.4teachers.org](http://www.4teachers.org)  
S. Central Reg Tech in Ed Consortium (SCR\*TEC)  
Teachers' stories. Trials, triumphs with technology in classroom.  
Innovative work. Interviews with specialists. Annotating Websites as  
lessons. Sample presentations. Students' stories. Surveys of tech use.
- Fostering the Use of Educational Technology: Elements of a National  
Strategy  
[www.rand.org/publications/](http://www.rand.org/publications/)  
Thomas K. Glennan & Arthur Melmed, Rand Corp Report.  
Learning-effectiveness, cost-effectiveness of technology. Nat'l strategy to  
increase technology in ed.
- Future of Networking Technologies for Learning  
[www.ed.gov/Technology/Futures](http://www.ed.gov/Technology/Futures)  
U.S. Department of Education  
November 1995 conference.  
White papers, report.

TELECOMMUNICATION ACT OF 1996

# Universal Service Fund

*A Significant Opportunity for  
K-12 Schools Who Are Prepared*

Basic Information on the Program and Web Resources



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Printed in the United States of America  
09-97

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D7BR215900